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10/775,840	02/10/2004	Carey J. Naquin	1391-46000	1645

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EXAMINER	
BOMAR, THOMAS S	

ART UNIT	PAPER NUMBER
3672	

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/775,840	NAQUIN ET AL.	
	Examiner	Art Unit	
	Shane Bomar	3672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fluid pump, poppet valve, orifice, reduced-diameter flow path, tortuous flow path, flow restriction and/or restrictor, and the single-position valve mechanism must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "93" has been used to designate both threads and annulus; this also occurs in paragraph [0012] of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 103. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: in paragraph [0015], the recitation of "actuator mechanism 8" should most likely be --actuator mechanism 89--; in paragraph [0017], the recitation of "first positions 111" should most likely be --first positions 190--.

Appropriate correction is required.

Claim Objections

5. Claims 8, 10, 11, 30, and 50 are objected to because of the following informalities: in claim 8, the recitations of "to a second position" and "to a first position" should most likely be --to one of the second positions-- and --to one of the first positions--, respectively; in claim 10, the recitation of " a spring compressed" should most likely be --a spring is compressed--; in claims 11 and 30, the recitation of "in a second position" in each claim should most likely be --in one of the second positions--; in claim 50, the recitation of "the spring" lacks proper antecedent basis because a spring was never recited in any of claims 47, 44, or 41. Appropriate correction is required.

6. Applicant is advised that should claims 16 and 17 be found allowable, claims 35 and 36 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 34 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a valve mechanism that comprises a valve sleeve that receives a piston that slides within the sleeve, ***or*** a valve mechanism that is selected from the group consisting of a poppet valve, an orifice, a reduce-diameter flow path, and a tortuous path (see paragraph [0014]), does not reasonably provide enablement for a valve mechanism that comprises both a valve sleeve that receives a piston that slides within the sleeve ***and*** a valve mechanism selected from the currently claimed group (emphasis added). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification leads one to believe that the valve mechanism's preferred embodiment is shown in Figure 1, but that the valve mechanism could alternatively be selected from one of the group elements of claim 34. Neither the Figures nor the description appear to lead one to believe that the valve mechanism can be a combination of the preferred embodiment and one of the alternative valve mechanisms. Although, it is noted that the last line of paragraph [0014] is enabling for the system to have a valve mechanism that comprises a valve sleeve that receives a piston that slides within the sleeve and an additional valve mechanism selected from one of the group elements of claim 34.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 40 states that the valve mechanism is a single-position mechanism, although it is unclear how this can be the case when the piston is said to slide within the sleeve via an actuator, thereby inherently making the mechanism a multi-position mechanism.

With regard to claims 35 and 36, it must be noted that if the applicant did mean for these claims to depend from claim 22, then a rejection that is analogous to the rejection of claim 34 would also have to made against these two claims since the piston is claimed as being moveable in the sleeve (i.e., the mechanism would be multi-positional) in claim 22, whereas it would be unclear how the valve mechanism could then be a single-position device.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-3, 6, 7, 13-15, 18-20, 22, 25, 26, 32-34, 37-39, 41-46, and 51-54 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4,653,524 to Wilson.

Regarding claims 1-3 and 22, Wilson discloses a flowbore fluid temperature control system comprising: a valve mechanism that adjusts the flow of a fluid through a flowbore 28, the valve mechanism comprising: a valve sleeve 90 within the flowbore forming an annulus between

the outside of the valve sleeve and the inside of the flowbore; the valve sleeve comprising flow ports 92 and 92a allowing fluid flow through the valve sleeve and into the annulus; and a piston 58 slidingly engaging the inside of the valve sleeve, the position of the piston within the valve sleeve controlling the fluid flow through the flow ports; an actuator 80 that adjusts the position of the piston within the valve sleeve; and an operating system 30 that operates the actuator and controls the flowbore fluid pressure (see Figs. 1, 2, 4, and 5, and col. 3, lines 7-67).

Regarding claims 6 and 25, the actuator further comprises a spring 80 within the valve sleeve that interacts with the piston (see Fig. 2).

Regarding claims 7 and 26, the piston 58 moves in a first direction with an increase in flowbore fluid pressure such that the force of the flowbore fluid pressure causes the piston to compress a spring 80 (see Figs. 2, 4, and 5).

Regarding claims 13 and 32, the operating system further inherently comprises a fluid pump that controls the fluid pressure within the flowbore since a pump would be needed to supply the inlet fluids.

Regarding claims 14 and 33, the operating system operates the actuator mechanism to selectively control the amount of fluid flow through the valve mechanism (see col. 3, lines 26-46).

Regarding claims 15 and 34, the valve mechanism is selected from the group consisting of an orifice (see elements 90 and 92a), a reduced-diameter flow path, and a tortuous flow path (see Figs. 2, 4, and 5).

Regarding claims 18 and 37, the actuator 80 is a mechanical actuator.

Regarding claims 19 and 38, the operating system is a hydraulic system (see col. 5, lines 3-24).

Regarding claims 20 and 39, the valve mechanism is a multi-position mechanism (see Figs. 2, 4, and 5).

Regarding claims 41-44 and 51-52, Wilson discloses a method of adjusting the temperature of a flowbore fluid comprising: adjusting the flow of a fluid through a flowbore by selectively positioning a piston 58 within a valve sleeve 90 to control flow of a fluid through flow ports 90 and 92a in the valve sleeve by operating an actuator 80 by selectively adjusting the fluid pressure in the flow bore; maintaining a selected flow rate through the valve sleeve and increasing the temperature of the flowbore fluid by increasing the fluid pressure of the flowbore fluid entering the valve sleeve (see col. 5, line 3 through col. 7, line 6).

Regarding claims 45 and 53, the piston 58 interacts with spring 80 (see Fig. 2).

Regarding claims 46 and 54, the method further comprising increasing the fluid flow through the valve sleeve by selectively increasing the flowbore fluid pressure to move the piston in a first direction in the valve sleeve, the piston opening flow ports in the valve sleeve and compressing a spring as the piston moves in the first direction; and decreasing the fluid flow through the valve sleeve by selectively decreasing the flowbore fluid pressure to allow the spring to move the piston in a second direction in the valve sleeve, the piston closing flow ports in the valve sleeve as the piston moves in the second direction (see Figs. 2, 4, and 5).

13. Claims 1-11, 13-30, and 32-40 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 6,095,249 to McGarian et al.

Regarding claims 1-3 and 22, McGarian et al disclose a flowbore fluid control system comprising: a valve mechanism that adjusts the flow of a fluid through a flowbore 16, the valve mechanism comprising: a valve sleeve 28 within the flowbore forming an annulus 38 between the outside of the valve sleeve and the inside of the flowbore; the valve sleeve comprising flow ports 40 allowing fluid flow through the valve sleeve and into the annulus; and a piston 30 slidingly engaging the inside of the valve sleeve, the position of the piston within the valve sleeve controlling the fluid flow through the flow ports; an actuator 64 that adjusts the position of the piston within the valve sleeve; and an inherent operating system (not shown) that operates the actuator and controls the flowbore fluid pressure (see Figs. 1 and 4, and col. 5, line 9 through col. 6, line 38). It is noted that the preamble of independent claims 1 and 22 recites a flowbore fluid temperature control system, although the body of the claim is silent as to how the system controls the temperature of the fluid. Without a positive recitation within the body of the claim as to how the system controls the temperature, the Examiner need only find a system that discloses all of the limitations from the body of the claim since the preamble recitation of temperature control is only intended use. Furthermore, since McGarian et al disclose all of the claimed system limitations, as noted above, the disclosed system will inherently control the fluid temperature through the flowbore.

Regarding claims 4 and 23, a seal 76 or 77 prevents fluid flow across the seal between the outside of the piston and the inside of the valve sleeve (see Fig. 4).

Regarding claims 5 and 24, the valve sleeve 28 further comprises an outer threaded portion that threadingly engages an inner threaded portion of the flowbore (see Fig. 1 wherein

element 34 is an extension of sleeve 28, and it can be seen that element 34 is threaded into the area where casing 4 and crossover 6 are connected).

Regarding claims 6 and 25, the actuator further comprises a spring 64 within the valve sleeve that interacts with the piston (see Fig. 4).

Regarding claims 7 and 26, the piston 30 moves in a first direction with an increase in flowbore fluid pressure such that the force of the flowbore fluid pressure causes the piston to compress a spring 64 (see col. 6, lines 27-33).

Regarding claims 8 and 27, the inside of the piston 30 further comprises a circumferential groove 52 that reciprocates between multiple first and second positions (see Fig. 2); the valve sleeve 28 further comprises a ratchet lug 42 or 44 extending from the sleeve that travels within the groove; the piston moves axially under a first load until the ratchet lug moves to one of the second positions, the ratchet lug rotating the piston as the ratchet lug travels to the second position; the piston moves axially under a second load until the ratchet lug moves to one of the first positions, the ratchet lug rotating the piston as the ratchet lug travels to the first position; the piston selectively moves between the first and second positions as the piston rotates within the valve sleeve; and the position of the piston in the first and second positions allowing varying flow rates through the valve sleeve (see col. 5, lines 54-63). Although it is noted that the valve sleeve in this reference carries the lug while the piston contains the slot, it would be inherent that this configuration could be switched since it is notoriously known in the art to do as such without hindering the operation of the piston or valve.

Regarding claims 9 and 28, the flowbore fluid pressure provides the first load (see col. 6, lines 24-30).

Regarding claims 10 and 29, a spring 64 compressed as the piston moves to one of the second positions provides the second load (see col. 6, lines 12-14).

Regarding claims 11 and 30, once the piston is in one of the second positions, the valve mechanism maintains a selected fluid flow rate with an increase in the flowbore fluid pressure (see col. 5, lines 58-67, wherein when port 40 is partially closed, a selected flow rate would inherently be maintained).

Regarding claims 13 and 32, the operating system further inherently comprises a fluid pump that controls the fluid pressure within the flowbore (see col. 5, lines 28-35).

Regarding claims 14 and 33, the operating system operates the actuator mechanism to selectively control the amount of fluid flow through the valve mechanism (see col. 5, line 28 through col. 6, line 38).

Regarding claims 15 and 34, the valve mechanism is selected from the group consisting of an orifice (see elements 40, 54, and 56), a reduced-diameter flow path 58, and a tortuous flow path 157 (see Figs. 4 and 5, and col. 6, lines 55-59).

Regarding claims 16, 17, 21, 35, 36, and 40, the valve mechanism comprises a single-position device adapted to create a flow restriction, wherein the restriction is created by a bar, or rod, in the bore of the valve mechanism (see col. 6, lines 60-63, wherein the rod is taken to be a single-position device since it remains stationary).

Regarding claims 18 and 37, the actuator 64 is a mechanical actuator.

Regarding claims 19 and 38, the operating system is a hydraulic system (see col. 6, lines 27-33).

Regarding claims 20 and 39, the valve mechanism is a multi-position mechanism (see Figs. 2 and 6).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 12 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGarian et al in view of US patent 6,659,186 to Patel.

McGarian et al teach the fluid control system of claims 8 and 27 above that includes a piston. However, it is not explicitly taught that a lock ring locks the piston in a selected second position.

Patel teaches a fluid control system similar to that of McGarian et al (see Figs. 1, 3, 6, 19, and 20). It is further taught that a lock ring 60 or 546 locks piston 20 or 512 in a selected second position (see Figs. 3 and 20). It would have been obvious to one of ordinary skill in the art, having the teachings of McGarian et al and Patel before him at the time the invention was made, to modify the system taught by McGarian et al to include the lock ring of Patel, in order to obtain a lockable piston. One would have been motivated to make such a combination since Patel has shown it to be notoriously known in the art to lock components of a valve mechanism in a selected position with lock rings.

16. Claims 47-50 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson in view of McGarian et al.

Regarding claims 47 and 55, Wilson teaches the method of adjusting the temperature of a flowbore fluid from claims 44 and 51 above that includes a piston within a valve sleeve. However, it is not taught that a ratchet lug extending from the piston travels within a circumferential groove on the inside of the valve sleeve, the groove reciprocating between multiple first and second positions around the inside of the valve sleeve, and positioning the piston by applying axial forces on the piston to move the lug within the groove, the movement of the lug causing the piston to move axially between the first and second positions as the piston rotates.

McGarian et al teach a system that includes a piston within a valve sleeve similar to that of Wilson. It is further taught that the inside of the piston 30 further comprises a circumferential groove 52 that reciprocates between multiple first and second positions (see Fig. 2), and the valve sleeve 28 further comprises a ratchet lug 42 or 44 extending from the sleeve that travels within the groove, wherein the piston is positioned by applying axial forces on the piston to move the lug within the groove, the movement of the lug causing the piston to move axially between the first and second positions as the piston rotates (see col. 5, lines 54-63). Although it is noted that the valve sleeve in this reference carries the lug while the piston contains the slot, it would be inherent that this configuration could be switched since it is notoriously known in the art to do as such without hindering the operation of the piston or valve. It would have been obvious to one of ordinary skill in the art, having the teachings of Wilson and McGarian et al before him at the time the invention was made, to modify the piston and sleeve taught by Wilson

to include the groove and lug configuration of McGarian et al, in order to obtain a valve mechanism that is able to travel through multiple selected positions. One would have been motivated to make such a combination since McGarian et al have shown it to be notoriously known in the valve art to provide a piston and associated valve sleeve with a groove and ratchet lug configuration so that the piston may be reciprocated through numerous positions.

Regarding claims 48 and 56, the combination applied to claims 47 and 55 above teaches that the method further comprises applying axial forces to the piston to move it to a selected position to allow a selected flow rate through the valve sleeve (see Figs. 2, 4, and 5 of Wilson and col. 5, lines 58-65 of McGarian et al).

Regarding claim 49, the combination applied to claim 48 above teaches that the method further comprises maintaining a selected flow rate through the valve sleeve and increasing the temperature of the flowbore fluid by increasing the fluid pressure of the flowbore fluid entering the valve sleeve (see col. 5, lines 37-62 of Wilson).

Regarding claims 50 and 57, the combination applied to claims 47 and 56 above teaches that the axial forces are caused by fluid pressure in a first direction and the spring in a second direction (see Figs. 2, 4, and 5 of Wilson and Fig. 5 of McGarian et al).

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bailey et al teach an acoustically operated downhole system. Ross et al teach actuator and/or operating systems that can be mechanical, hydraulic, or electrical. Bissonnette, Elmer, Iwatsuki, Gamble, McDonald et al, Presnell, and Zisk teach various other flowbore fluid control valves of specific interest.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 571-272-7026. The examiner can normally be reached on Monday - Thursday from 7:00am to 4:30pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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tsb
June 20, 2005